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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 09/830,306
Filing Date: April 25, 2001
Appellant(s): PEARCE ET AL.

_____
Lawrence J. Chapa
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/29/2008 appealing from the Office action

mailed 5/16/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,305,332	OZAWA	4-1994
5,673,363	JEON et al	9-1997
5,774,837	YELDENER et al	6-1998
5,956,683	JACOBS et al	9-1999

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 3, 13, 15, and 25-26 stand rejected under 35 U.S.C 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363).* Claims 4 and 16 stand rejected under 35 U.S.C 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)* and further in view of Ozawa *(U.S. Patent: 5,305,332).* Claims 6-7, 11-12, 18-19, and 23-24 stand rejected under 35 U.S.C 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)* and further in view of Yeldener et al *(U.S. Patent: 5,774,837).* These rejections are set forth in a prior Office Action, mailed on 5/16/2007 and are repeated below:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 13, 15, and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)*.

With respect to **Claims 1, 3, 13, and 15**, Jacobs discloses a distributed speech recognition process in which speech recognition parameters are arranged in vectors *(extracted speech recognition feature vectors, Col. 5, Lines 22-43; and Col. 6, Lines 13-30)*, each vector corresponding to a particular sampling time frame *(feature vectors arranged in frames, Col. 6, Lines 58-63)* and the speech recognition parameters are received at a second location having been transmitted from a first location *(transmitting speech feature vectors to a remote location over a communication channel, Col. 9, Lines 7-20)*.

Jacobs does not provide for any type of transmission error correction as is disclosed in the presently claimed invention, however Jeon recites:

Identifying a group comprising one or more audio (speech in the case of Jacobs) parameters which have undergone a transmission error *(detecting an error in a received frame, Col. 4, Lines 22-28)*; and

Replacing one or more parameters in the identified group, wherein one or more parameters are replaced by respective replacement parameters corresponding to parameters from a different time frame, received without error after the identified error group *(utilizing coefficients from a future frame without error to reconstruct a detected error frame, Col. 4, Line 62- Col. 5 Line 2; and Col. 6, Lines 20-26).*

Jeon further discloses that the reconstruction coefficients are closet in receipt order to the error-containing frame *(coefficients from a contiguous frame used for error-containing frame reconstruction, Col. 6, Lines 20-26 and Lines 58-63).*

Jacobs and Jeon are analogous art because they are from a similar field of endeavor in audio encoding. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jacobs with the transmission error correction means taught by Jeon in order to conceal errors of an error-containing frame while minimizing its influence on succeeding frames *(Jeon, Col. 6, Lines 58-63).*

With respect to **Claims 25 and 26**, Jacobs further discloses a wireless communication channel *(Fig. 2; and Col. 5, Lines 22-43).*

Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)*, and further in view of Ozawa *(U.S. Patent: 5,305,332).*

With respect to **Claims 4 and 16**, Jacobs in view of Jeon teach the error correction system and method that conceals errors by replacing speech parameters

from a error-containing frame with speech parameters from a closest frame, as applied to Claims 3 and 15. Jacobs in view of Jeon do not specifically suggest a well-known method for error recovery using interpolation, however Ozawa teaches such a method *(interpolating pitch and filter parameters from past and future proper frames to correct transmission errors, Col. 4, Lines 7-12).*

Jacobs, Jeon, and Ozawa are analogous art because they are from a similar field of endeavor in speech parameter coding. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jacobs in view of Jeon with the use of interpolation in error recovery as taught by Ozawa in order to provide improved error correction by using parameters from past and future frames *(Ozawa, Col. 6, Lines 32-40).*

Claims 6-7, 11-12, 18-19, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)*, and further in view of Yeldener et al *(U.S. Patent: 5,774,837)*.

With respect to **Claims 6 and 18**, Jacobs in view of Jeon teach the error correction system and method that conceals errors by replacing speech parameters from a error-containing frame with speech parameters from future correct frames, as applied to Claims 1 and 13. Jacobs in view of Jeon teach do not teach the method of error detection through comparison of a speech estimate to a threshold, however Yeldener discloses:

An error mitigating method and apparatus, wherein determination of which speech recognition parameter or parameters are to be replaced is performed by predicting fro vectors received without error, a predicted value for each speech recognition parameter within the identified group of vectors, and replacing those speech recognition parameters within the identified group of vectors that are outside of a predetermined threshold relative to their respective predicted value *(comparing an estimated pitch value of a frame to previous values to detect a variation in a speech signal indicative of an error, Col. 13, Lines 37-50).*

Jacobs, Jeon, and Yeldener are analogous art because they are from a similar field of endeavor in audio parameter coding. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the method of estimating a pitch value and comparing it to a threshold for error detection as taught by Yeldener with the teachings of Jacobs in view of Jeon teach in order to provide a means of further error detection for frame smoothing to improve the quality of reproduced speech *(Yeldener, Col. 13, Lines 37-50).*

With respect to **Claims 7 and 19**, Yeldener teaches a means for changing parameters of a frame if one parameter does not satisfy a threshold condition, as applied to Claims 6 and 18.

Claims 11 and 23 contain subject matter similar to Claims 6 and 18, and thus, are rejected for the same reasons.

With respect to **Claims 12 and 24**, Yeldener teaches the subject matter applied to Claims 6 and 18, wherein an error is detected in a three frame period.

(10) Response to Argument

The appellants traverse the prior art rejection of independent **claims 1 and 13** and dependent **claims 25-26** on the grounds that: Jeon et al *(U.S. Patent: 5,673,363) (hereinafter "Jeon")*, and thus, the overall prior art combination does not make obvious replacing "the one or more speech recognition parameters... with copies of one or more corresponding speech recognition parameters...corresponding to a different particular sampling time frame" *(Appeal Brief, Page 6)*. These alleged deficiencies in the teachings of Jeon are based more specifically on the grounds that : (a) Jeon employs multiplying a copied frame by a weighting value, and thus, the replacement values of Jeon are not copied, but computed *("the replacement value is not a copied value, but is a value that is computed", Appeal Brief, Pages 6-7)* and (b) the replaced parameter is not replaced with a copy of the corresponding parameter from a different vector because Jeon utilizes a last parameter from an immediately prior frame for a replacement value *(appellants further provide an example of "corresponding" based on replacing a vector with a vector having a matching vector number, Appeal Brief, Page 7)*. Prior to addressing these arguments, the examiner will provide an explanation of the prior art as it applies to the independent claims.

With respect to the independent claims, Jacobs et al *(U.S. Patent: 5,956,683)* recites a distributed speech recognition system that transmits speech recognition feature parameters from a first location to a remote location over a communication channel to be recognized at a receiver *(Col. 9, Lines 7-20; and system overview, Figs. 2*

and 5). These transmitted parameters are in the form of speech frames of speech recognition feature vectors *(Col. 5, Lines 22-43; and Col. 6, Lines 13-30)*. Although it is well known in the art and considered by Jacobs *(corruption resulting from transmission, Col. 6, Lines 27-30)* that transmitted speech data parameters (speech recognition vectors in the case of Jacobs) can be corrupted and lost as a result of transmission, Jacobs does not provide any error recovery processing by which to overcome such a difficulty, namely in the form of a parameter copying process at a receiver. Jeon, however, overcomes these deficiencies in Jacobs. Jeon describes the process/means for detecting a transmission error for parameters in a received audio frame *("error detector", Col. 4, Lines 22-28)* and replacing the detected error parameters with a copy of a corresponding parameter *(i.e., close in proximity or receipt order, and thus, value (it corresponds) to the parameter with error)* located near the last segment in a prior frame *(Col. 4, Line 62- Col. 5, Line 19; and Col. 6, Lines 20-26)*. Although these parameter frames are multiplied by a weighting value, this value can be equal to one *("equal to one", Col. 5, Lines 18-19)*, and thus, the replacement values in Jeon represent a "copy" of the values of the preceding frames. It would have been obvious to one of ordinary skill in the art, at the time of invention would provide a benefit that is easily apparent, in that incorporating the error recovery concept taught by Jeon would allow Jacobs to conceal transmission errors *(Jeon, Col. 6, Lines 58-63)* that could otherwise degrade the performance of his distributed speech recognizer that relies on a transmission channel.

Returning now to the appellants' argument (a), the examiner notes that although the copied parameter segments taught by Jeon are weighted, they still represent "copies". More specifically, the examiner points out that the appellants are relying on the recitation of a "copied" frame which would involve an active step of copying or replication *("replacement value is not a* <u>*copied*</u> *value"...."never results in a* <u>*copied*</u> *parameter value as provided by the claims of the present application", Appeal Brief, Page 7)*. Instead, the claimed invention requires merely that a "copy" or "copies" of parameter values *(claim 1, line 11- "copies"; claim 13, line 11- "copies")* are used as a replacement for parameters with error. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies *(i.e., "copied parameters" or an active copying means/step)* are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The examiner notes that Jeon does teach the concept of replacing parameters with a "copies" of parameter segments from a previous frame. Even though the parameters in Jeon are weighted, Jeon evidences that it well-known in the art that the weighting factor can be equivalent to one *(Col. 5, Lines 1-19)*. In this case, the parameter segment is taken from a previous claim and multiplied by one. The result of such a calculation is an *identical* parameter segment having the same value *or a copy* of the original segment. This concept can also be illustrated with a simple numerical value example. If an original data value was equivalent to 5 and was multiplied by a

weighting factor of 1, the new parameter would be equal to 5. Since the old and new

values are equivalents, the new value is a copy of the old value. It is not "copied" from

the old value *(i.e., no direct duplication or replication takes place)*, but it is nonetheless a

"copy" of it because it is equivalent. The same distinction applies here wherein Jeon

teaches the claimed "copies" and the "copied" parameters are not claimed. The

appellants have also acknowledged the equivalence of the previous frame parameter

and the replacement value in Jeon *("have an equivalent value… if the weighting value*

happens to be one", Appeal Brief, Page 7). Thus, since the claims do not recite

"copied" parameters or a step/means of actively copying and instead require copies or

equivalents to parameters in a prior frame which is taught by Jeon is as noted above,

the examiner respectfully submits that the aforementioned art rejection is proper.

Returning now to the appellants' argument (b), the examiner notes that, as

pointed out above, Jeon relies on copies of prior frame parameter segments for error

recovery and will further explain why the parameters are "corresponding" as is required

by the presently claimed invention. The appellants' relied upon definition of

"corresponding parameter" refers to a vector with a matching vector number *(i.e., C9*

replaces C9 from a different frame, Appeal Brief, Page 7). In response to applicant's

argument that the references fail to show certain features of applicant's invention, it is

noted that the features upon which applicant relies *(i.e., corresponding referring to a*

matching vector number) are not recited in the rejected claim(s). Although the claims

are interpreted in light of the specification, limitations from the specification are not read

into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir.

1993). Given its broadest reasonable interpretation, however, "corresponding" is taught by Jeon. Jeon teaches that the parameters selected from a previous frame for use in a error recovery process are coefficients of any different segment that is located at or near the last prior segment *(Col. 6, Lines 20-26).* These coefficients "correspond" to a parameter with error because they are similar or compatible with the parameter with error due to proximity. The purpose here in Jeon is inherently to select close-proximity values because they are close in value *(i.e., do not vary, are close, compatible, etc.)* to the parameter with error based on their position in a speech signal, thus resulting in a smooth audio waveform transition between the original segments and copies, as opposed to longer term audio segments that may have drastically varying values and result in an abrupt transition *(i.e. undesirable noise or discontinuities between frames, a concept described in Col. 1, Lines 51-53)* between an original last segment and a next copy parameter segment. The examiner additionally notes that the concept of parameters as speech recognition vectors are taught by Jacobs, as is pointed out above. Thus, parameter segments in close proximity to those with error are "corresponding" and for this reason also, the examiner respectfully submits that the aforementioned art rejection is proper.

Thus, for at least the preceding reasons, the examiner respectfully submits that the aforementioned art rejection is proper.

Some of the appellants arguments with respect to **claims 3 and 15** *(recited means/process of "replacing the one or more speech recognition parameters", Appeal Brief, Page 8)* are similar to those directed to claims 1 and 13. In regards to such

arguments, please see the above response directed towards claims 1 and 13. With respect to Claims 3 and 15, the appellants further argues that Jeon fails to teach "replacing an entire vector" because Jeon teaches away from replacing a total frame and Jeon only teaches analysis of a parameter and not a prior vector. In response, the examiner notes that these claims do not require replacing an "entire frame" as is argued by the appellants. Instead, the claim requires determining a group of vectors from a frame and then replacing those entire vectors identified as having error, not an entire frame. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies *(i.e., replacing an entire frame of vectors)* are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In the art rejection, the speech feature vector-based processing argued by the appellant as not being taught by Jeon is taught by Jacobs as is noted in the above description of the prior art of record. Jeon is relied upon for teaching segments in the form of coefficients for error detection and replacement *(as is described above)*, while in the primary reference *(i.e., Jacobs)* segments are in the form of speech recognition feature vectors *(Col. 6, Lines 13-30)*. Thus, the combination of the prior art yields a system/process in which errors are detected in speech recognition vectors and these whole vector segments with error are replaced by copies of segments *(i.e., vectors)* from segments *(i.e., vectors)* in closest proximity *(i.e., closest in receipt order)*. Therefore, it is the combination of the prior art of record that teaches the

aforementioned limitation of claims 3 and 15. For at least these reasons, the examiner respectfully submits that the aforementioned art rejection is proper.

The appellants' arguments with respect to **claims 4, 6-7, 16, and 18-19** *(Appeal Brief, Page 9)* are similar to those directed to claims 3 and 15. In regards to such arguments, please see the above response directed towards claims 3 and 15.

With respect to **claims 11-12 and 23-24**, the appellants present new arguments traversing the corresponding art rejection on the grounds that the prior art of record fails to teach making a determination based upon how many speech recognition parameters in a vector group are outside of each of said one or more threshold levels because changing parameters when one parameter does not satisfy a threshold is not equivalent *(Appeal Brief, Page 9)*. In response, the examiner notes that it is the combined teachings of Jacobs, Jeon, and Yeldener et al *(U.S. Patent: 5,774,837)* that teaches the aforementioned claim limitations. As pointed out by the appellants, Yeldener's error decision is based on comparing the variance between a single coefficient value and other values to a threshold *(Col. 13, Lines 36-50)*, however, as is noted above, Jacobs teaches segments in the form of speech recognition vectors that have a plurality of parameters. Thus, when combined with the teachings of Jacobs, Yeldener provides a means of error detection *(which provides a more specific version of the general error detection in Jeon, Col. 4, Lines 22-25)* responsive to the analysis of how many (i.e., how many- has one or more parameters been determined to have error?) differences are outside of a predetermined threshold for the benefit of improving the quality of the

reproduced speech *(Yeldener, Col. 13, Lines 37-50)*. For at least these reasons, the examiner respectfully submits that the aforementioned art rejection is proper.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/James S. Wozniak/

Examiner, Art Unit 2626

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